REMARKS/ARGUMENTS

In response to the Office Action dated February 17, 2004, claims 1, 6 and 8 are amended. Claims 1-8 are now active in this application. No new matter has been added.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 102 AND § 103

Claims 1-4 and 6-8 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tamesue et al. (USPN 6,320,389), for the reasons substantially of record.

To expedite prosecution, claims 1, 6, 8 are amended such that a converter converts the detected voltage amplitude into an insulation resistance on the basis of not only a predetermined relationship between a voltage amplitude and an insulation resistance, but also the resistance (R_0) of the detection resistor.

All embodiments of the relationship represented by expressions eq. 3, eq. 6, eq. 9, eq. 12 etc. include the resistance R_0 of the detection resistor. No new matter has been added by way of this amendment.

With regard to independent claims 1, 6 and 8, as was noted in the previous response, Tamesue et al. discloses an electric leak detecting apparatus wherein an AC signal is applied between a vehicle body and a set battery 3a through a condenser Cp, and a real part of an admittance is computed from amplitudes and phases of detected voltage *v* and current *i*, as shown in Fig. 1 of the reference. Tamesue et al. also sets forth in the abstract that "--- , an admittance detecting circuit for computing an electric leak admittance [Y] from the AC signal **voltage** and AC signal **current** of the detecting signal S 1, ---".

However, Tamesue et al. fails to teach a ground detection apparatus for an electric vehicle comprising a detection signal generator (2) being connected to one terminal (A) of a coupling capacitor (4) through a detection resistor (3), and a signal detector detecting a voltage amplitude of the terminal (A) of the coupling capacitor (See claim 1, 6 and Figs. 4 and 5 of the present application).

According to the invention recited in amended claims 1 and 6, the detected voltage Va is converted into an isolation resistance R_L on the basis of a predetermined relationship between a voltage (Va, Va') and an insulation resistance (R_L, R'_L) such as equations (3), (6), (9), (12) etc. in which the voltage also depends on the resistance (R_0) of the detection resistor because the resistance R_0 is incorporated in the above relationship. In addition, the insulation resistance is compared with a predetermined threshold value (See Section on Ground Detection Operation and Fig. 7). Therefore, **the detection resistor (R_0)** is an important component of the present invention.

In contrast, the ground detection apparatus for electric vehicle of Tamesue et al. has to detect not only the **voltage** *v*, but also the current *i* in order to calculate the admittance. As a result, Tamesue et al. does not disclose or suggest the invention of claim 1 or claim 6, as amended. It is noted that even if the apparatus of Tamesue et al. is assumed to be the apparatus of claim 1 wherein the detection resistor is nearly zero ohm (R_0=0Ω), though in such an assumption, the voltage Va would be a constant value and therefore, the insulation resistance could not be calculated by using the equations (3), and (6) etc.

Regarding this, the Examiner asserts, as a response to arguments of Applicant, that "However [the capacitor of Tamesue et al.] is connected [to the signal generator] there will exist some resistance, no matter how small, at the connection point, which if desired, could be

represented by a conventional electrical symbol for resistance." If this were correct, however, a resistance of the "existing some resistance" should be determined in order to evaluate an insulation resistance according to the ground detection apparatus of claim 1 because the insulation resistance (R_L) could not be evaluated according to the predetermined relationship of claim 1 without a constant value of the determined resistance (R_0), as mentioned above. It should be noted that the value of the "***existing some resistance***" of Tamesue et al. should be undetermined and unstable, even if it actually exists. The converter of the present application does not need current information, such as a detected current value or a predetermined current value, as understood from the expressions eq. 3, eq. 6, eq. 9, eq. 12 etc.

As a result of the above, Tamesue et al. fails to disclose a converter converting a detected voltage amplitude into an insulation resistance on the basis of a predetermined relationship between a voltage (Va) and an isolation resistance (R_L, R'_L) and a resistance of a detection resistor (R_0), as now required by amended claims 1, 6 and 8.

Regarding to claim 3 and 7, the Examiner rejects these claims referring Fig. 26 of Tamesue et al. It should be noted that Fig. 26 of Tamesue et al. shows just an altered embodiment of the lower drawing of Fig. 1 and the apparatus of the embodiment has to detect not only the voltage v, but also the current *i* in order to calculate the admittance. The configuration of the invention taught by Tamesue et al. is quite different from that of the inventions of claims 3 and 7

We believe that Claims 1, 6 and 7 are allowable over the prior art in the amended form. We also believe that other claims are allowable at least based on their dependency from the independent claims respectively.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamesue et al. in view of Gaughan et al. (USPN 5,530,363).

However, as claim 5 depends from amended claim 1, claim 5 is patentable over Tamesue et al. also, even when considered in view of Gaughan et al.

Furthermore, Gaughan et al. discloses a DC ground fault detecting apparatus wherein a switch 18, being connected between a center tap 16 and a ground, is periodically switched between on and off to impose a square wave modulation on a ground current and a response current is detected by a Hall probe 21, as set forth in column 2, line 65-column 3, line 24 and as shown in Figs. 2 and 3. However, the configuration of invention taught by Gaughan et al. is quite different from that of the claimed invention. Furthermore, the manner in which Gaughan et al. imposes a square wave modulation on a ground current must be taken into consideration any suggested modification of Tamesue et al., which the Examiner has not done.

In this regard, it should be noted that it is well established in MPEP § 2143.01, last paragraph that the proposed modification (of a reference) cannot change the principle of operation of a reference. "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims prima facie obvious." Additionally, the second to the last paragraph in MPEP § 2143.01 states that the "**proposed modification cannot render the prior art unsatisfactory for its intended purpose**".

Thus, claim 5 is patentable over Tamesue et al. in view of Gaughan et al. for reasons in addition to the fact that amended independent claim 1, from which claim 5 depends, is patentable over Tamesue et al.

CONCLUSION

Accordingly, it is urged that the application, as now amended, overcomes the rejection of record and is in condition for allowance. Entry of the amendment and favorable reconsideration of this application, as amended, are respectfully requested. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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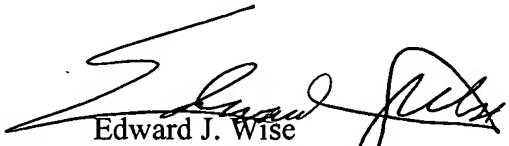

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